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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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WENDEROTH, LIND & PONACK, L.L.P.				
2033 K STREET N. W.				
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WASHINGTON, DC 20006-1021				
EXAMINER				
MUNOZ, GUILLERMO				
ART UNIT		PAPER NUMBER		
2637				

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/831,299

Applicant(s)

SHINICHIROU, SATOH

Examiner

Guillermo Munoz

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 October 2004.
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-4 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 3/24/2005.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed October 29, 2004 have been fully considered but they are not persuasive.

Applicants Arguments are summarized as follows:

"The control unit of claim 1 is required to be "operable to estimate an equalization target value in accordance with the output of said transversal filter, and to control a parameter of said transversal filter to minimize an equalization error which is an error between the equalization target value and the output of said transversal filter." Neither Tsuchinaga nor Kayanuma, either singly or in combination, discloses or suggests the above-identified limitation."

Examiners Response:

In response to applicant's argument that "operable to estimate an equalization target value in accordance with the output of said traversal filter, and to control a parameter of said traversal filter to minimize an equalization error which is an error between the equalization target value and the output of said transversal filter" is not found in the combination of Tsuchinaga and Kayanuma, a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art, in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. In a claim drawn to a process of making, the intended use must result in a manipulative difference as compared to the prior art. See *In re Casey*, 370 F.2d 576, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 312 F.2d 937, 939, 136 USPQ 458, 459 (CCPA 1963).

Examiner believes the combination of Tsuchinaga and Kayanuma viewed as a whole are capable of performing the intended use of estimating a target value in accordance with the output of the transversal filter and controlling a parameter of the transversal filter to minimize an equalization error, which is an error between the equalization target value and the output of said transversal filter. As stated in office action dated July 29, 2004, "Kayanuma teach an adaptive transversal filter designed to operate at $\frac{1}{2}$ the channel bit rate having a coefficient controlling circuit designed to adjust the coefficients of the transversal filter, note figure 1, elements 3, 4, 6, and 9". Slicer (Kayanuma's judger element 15) circuits are generally known in the art to map (judge infers estimation) a filtered signal level to the closet stored symbol value in the slicer. Using the broadest reasonable interpretation of estimating an equalization target value, which is used in generating the equalization error signal. Examiner interprets the function of estimating a target value to be inherent to the functions of Kayanuma's slicer. Kayanuma's slicer effects the output of the transversal filter by generating an error signal based on the transversal filter output by providing a determining value for generating the error signal used to update the coefficients of the transversal filter.

Claim Objections

Claims 1-4 are objected to because of the following informalities: Claims 1-4 need to be rewritten in such a way as to improve the claim language. The claims can be improved by replacing each occurrence of the term "operable" with —required—.

The term "operable" defined in Merriam-Webster's Collegiate Dictionary Tenth Edition page 812 as "fit, possible, or desirable to use", and is interpreted by Examiner as suggestive and

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optional. See MPEP § 2106. The subject matter of a properly construed claim is defined by the terms that limit its scope. It is this subject matter that must be examined. As a general matter, the grammar and intended meaning of terms used in a claim will dictate whether the language limits the claim scope. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. The following are examples of language that may raise a question as to the limiting effect of the language in a claim:

- (A) statements of intended use or field of use,
- (B) "adapted to" or "adapted for" clauses,
- (C) "wherein" clauses, or
- (D) "whereby" clauses.

This list of examples is not intended to be exhaustive.

Appropriate correction is required.

For completeness of record the rejection given in Office Action mailed July 29, 2004 has been included.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchinaga in view of Kayanuma.

Regarding claim 1, Tsuchinaga disclose all the subject matter claimed as follows. Tsuchinaga teach an analog/digital converter in figure 2 element 202; an automatic equalizer in figure 2, element 203; a frequency divider in figure 2 element 209. Tsuchinaga does not explicitly teach phase locked loop, however, the functionality of the phase detector, which generates a phase error signal based on the phase difference of the received signal and a clock signal (Col. 7, lines 46-47), is the same. Tsuchinaga teach interpolating data by processing sub-sampled data in an automatic equalizer, Mid-step decision unit, and a Post Coder, however, Tsuchinaga does not teach the automatic equalizer having a transversal filter, a straight line interpolator, or a control unit.

Kayanuma teach an adaptive traversal filter designed to operate at $\frac{1}{2}$ the channel bit rate having a coefficient controlling circuit designed to adjust the coefficients of the traversal filter based upon a detected error signal, note figure 1, elements 3, 4, 6, and 9; the output signal from the transversal filter 3 is interpolated by an interpolating circuit 4 and outputted.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Tsuchinaga's equalizer with Kayanuma's teaching of using an adaptive traversal filter since Tsuchinaga suggest in Col.8 lines 20-24, using an automatic equalizer having coefficients that can be adaptively set.

Regarding claim 2, Kayanuma does not explicitly teach "flip-flop element", however, the functionality of the 2T delay in element 4 of figure 1 is the same. Further, Kayanuma teach the adder following the 2T delay in element 4 of figure 1.

Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tsuchinaga in view of Kayanuma and in further view of Spurbeck et al..

Regarding claim 3; as applied to claim 1 above, Kayanuma teach the use of linear interpolation, in which interpolation is carried out using two sample points, however, suggest the interpolation can be improved in page 15, lines 1-9.

Spurbeck et al. teach an interpolation circuit having improved performance when the signal is sampled at a much lower rate than the baud rate. The interpolator is implemented as a nonlinear FIR polynomial, note Col. 11, lines 10-15 and Fig. 7.

Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to modify Kayanuma's interpolator with Spurbeck et al.'s teach of using an interpolator implemented as a nonlinear FIR polynomial, since Spurbeck et al. suggest in Col. 10, lines 19-23, that the modification would result in reduced complexity and cost of the overall system.

Regarding claim 4; Spurbeck et al. does not explicitly teach "flip-flop element", however, the functionality of the delay in element B260 of Fig. 7 is the same. Further, Spurbeck et al. teach a "plurality of multipliers" following the delay in element B260 of Fig. 7, and an "adder" following the multipliers in element B260 of Fig. 7.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

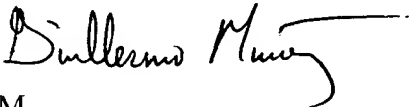
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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guillermo Munoz whose telephone number is 571-272-3045. The examiner can normally be reached on Monday-Friday 8:30a.m-4:30p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jay Patel can be reached on 571-272-2988. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


GM
May 8, 2005


JEAN B. CORBELLE
PRIMARY EXAMINER

5-14-05